

W5YI

National Volunteer Examiner Coordinator

REPORT

Up to the minute news from the world of amateur radio, personal computing and emerging electronics. While no guarantee is made, information is from sources we believe to be reliable. May be reproduced providing credit is given to The W5YI Report.

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★ In This Issue ★

Ham Astronauts Launched to Orbit
SAREX-II, A Very Big Success!
FSTV Uplinked to Shuttle Atlantis
Astronauts Communicate with Kids
Responsibility for Communications
RM-7649 Obtains Support
Petition Filed on Message Content
February Amateur Licensing Stats
NPRM: Talking Back to your TV Set
Packet Violations: No Action Yet
FCC Releases Inspection Results
Petition Filed on HF Packet
FCC's F.O.B. Discuss Ham Power
...and much, much more!

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FIVE LICENSED HAMS STREAK INTO SPACE!

SAREX-II Features Fast-Scan TV and School Communication

The Shuttle Atlantis roared into orbit Friday, April 5th, with five licensed ham operators aboard. STS-37 Mission Commander, Steve Nagel is **N5RAW**. The other four are Pilot Ken Cameron, **KB5AWP** and Mission Specialists Linda Godwin, **N5RAX**, Jay Apt, **N5QWL** and Jerry Ross, **N5SCW**. They will spend five days in space.

Hopefully this narrative will make some sort of sense as it is being written in almost "real time." It is now Saturday morning, April 6 - and today is when most of the ham radio activity aboard the shuttle is supposed to take place. It is difficult to cover an event when your deadline is the same day, but we have our "sources" all lined up.

We have already received phone calls from **Roy Neal/K6DUE** who chairs the SAREX Committee, **Bob Myers/W1XT** of OSCAR Satellite Report, ARRL's On-Site Representative **John Nickel/WD5EEV** (who works for Lockheed at Johnson Space Center, Houston) and **Bill Tynan/W3XO**; AMSAT's Vice President for Manned Space Programs. In addition, ARRL's **Rosalie White/WA1STO** and AMSAT president **Doug Loughmiller/KO5I** have sent us background material. While we are waiting for more information, let's cover what is supposed to happen today.

The primary objective of STS-37 is to orbit the Gamma-Ray Observatory (GRO), but they will also do a two-person EVA (extravehicular activity) spacewalk to practice techniques of moving about in the proposed space station ...and talk to school children by ham radio. There is also a chance that the astronauts will be able to communicate with Soviet cosmonauts aboard the Mir space station. The \$617 million Gamma Ray Observatory is the heaviest scientific payload ever carried into space on a shuttle. It weighs nearly 18 tons!

STS-37 is the fourth flight to carry an amateur radio experiment. NASA approved the use of amateur radio to encourage public participation in the space program and to support educational opportunities offered by amateur radio voice and digital communications. The Satellite Amateur Radio Experiment (SAREX) program is sponsored jointly by the American Radio Relay League (ARRL) and the Radio Amateur Satellite Corporation (AMSAT).

Planned amateur radio activities

The fast-scan ATV experiment is interesting in that it is the first time an FSTV broadcast (6 MHz wide) signal is to be uplinked to the shuttle. Ham operators at JSC hope to use this uplink to carry live

W5YI REPORT

National Volunteer Examiner Coordinator

video from crew member's families up to the shuttle. Two fast scan ATV sessions are planned. The crew also hopes to use the amateur slow-scan video gear using orbiter video cameras to show the GRO release and EVA.

Unattended packet radio capability aboard the shuttle will allow amateurs all over the world to communicate with the spacecraft and receive confirmations of the contact. The equipment is left in the packet robot mode during the astronauts' sleep periods and when no other SAREX activities are planned.

Ten schools across the United States will be able to talk via two meter amateur radio with the ham astronauts. From these contacts, hundreds of students and teachers will be directly involved in communication with the astronauts during the mission. Some phone patching to astronaut families is also anticipated.

Ham gear on STS-37

Atlantis' amateur equipment consists of a Motorola low-power (2.3 watts) FM hand-held transceiver, a Sony TV camera, a Panasonic VCR/TV monitor, a laptop computer and an antenna mounted in the flight deck window. An assembly cabinet houses the power supplies, SSTV converter, packet TNC and a sophisticated switching system. A FSTV module accommodates incoming NTSC (National Television Standards Committee) video. There is no FSTV downlink capability on board Atlantis, however, due to possible interreference inside the Space Shuttle cabin.

This configuration allows amateur stations within line-of-sight of the shuttle to use voice, SSTV, data or FSTV. The voice mode is operated in the attended mode, the others in either attended or automatic (unattended) operation. All SAREX-II operations are conducted in the two meter band with the exception of the fast scan TV uplink conducted on 70 centimeters.

The astronauts listen on any of three uplink frequencies but transmit only on one. There is no simplex operation with SAREX on either voice or packet; a method new to most packeteers. This

"split" operation system has been used successfully on previous missions. The down/uplink frequencies for voice/packet/SSTV are as follows:

<u>Mode:</u>	<u>Downlink:</u>	<u>Uplink:</u>
Voice/SSTV	145.55 MHz	144.95 (primary) 144.91, 144.97 MHz
Packet	145.51 MHz	144.91 (primary) 144.93, 144.99 MHz
FSTV	None	433-439 MHz

An STA (Special Temporary Authority) had to be approved by the FCC for the FSTV experiment since the uplinked TV signal is substantially wider than the 3 MHz authorized to the Amateur Satellite Service. Stations operating through orbiting satellites operate under Amateur Satellite Service rules - not those of the regular Amateur Service. Earth/space communications is only authorized between 435 and 438 MHz.

In addition, the crew received the customary waiver of FCC Rule §97.207 which requires space station operators to hold Amateur Extra Class tickets. **Ken Cameron/KB5AWP**, a General class ham, has been licensed since 1984. It was he who encouraged the other crew members to get their amateur tickets.

SAREX amateur activity

The astronauts started setting up their SAREX equipment on orbit 7 - about 7 hours into the flight. This was apparently too late to contact Soviet cosmonaut **Musa Manarov/U2MIR** on the Soviet space station. This will be attempted again later.

The first FSTV uplink test from KC6A/Jim Steffen to Atlantis on revolution 16 failed Saturday morning. It will be tried again tomorrow during orbit 32; this time from W5RRR, the Johnson Space Center Amateur Radio Club in Houston. The Goddard and Marshall Space Centers at Greenbelt, Maryland, and Huntsville, Alabama, are also involved in the fast scan TV experiment.

Saturday (today) is the big day for communications with the school kids with four schools scheduled - one each on orbit 17, 18, 19 and 20

WOULD YOU LIKE TO BECOME A VOLUNTEER EXAMINER?

"I am a currently licensed Advanced, Extra Class amateur radio
operator. I am John..... I do not have a station or operator license revoked or suspended., I do not own a sign

W5YI REPORT

National Volunteer Examiner Coordinator

Page #3

April 15, 1991

Each are programmed to last nearly 20 minutes. It is kind of interesting how these will be carried out since two meter propagation is line-of-sight and the shuttle will be out of range of the schools. While the astronauts and the kids will be seemingly talking direct on two meters - there is much technological "magic" transparently taking place in the background. Here is how it works.

As the shuttle races overhead, at least one of five two meter gateway stations in the "footprint" are tied via landline to the Darome Connection teleconference bridge operated by Diane Joosten in Chicago. The ham stations are located in Ft. Myers, Florida (**W4RDI/Don Carlson**); Corpus Christi, Texas (**W5GEL/Bob Douglas**); Holtville, California (**N6MNN/Ralph Warner**); Cuenca, Ecuador (**HC5K/Ted Jaramillo**) and Sao Paulo, Brazil (**PY2BJO/Junior De Castro**.)

At least one of these stations in the communications "footprint" will have direct contact with the space shuttle. All are tied into the Darome Connection via landline. The various amateur groups who are participating with their school systems call into a number furnished by Darome and reverse phone patch the shuttle communications to nearby two meter repeaters.

The teleconference bridge operator simply sends one or more of the gateway station communications down the phone lines to them. The two way conversation is handed off as needed from one two-meter gateway station to another as the spacecraft streaks by at nearly 18,000 miles per hour! Thus the schools have the illusion of direct two meter simplex operation with the spacecraft even though it is really a radio-to-phone-to-radio lashup.

The slow-scan video downlink experiments are scheduled to follow the school classroom contacts. Some of the SSTV will be fed directly into the schools. Later on there will be downlinked SSTV pictures of the Gamma Ray Observatory deployment and the spacewalk. After this past weekend, much of the ham radio activity aboard Atlantis will be automated. *[We will now take a break while we wait for more news from SAREX Control at Johnson Space Center.]*

Saturday Afternoon, 4:00 p.m.

It is now several hours later and we just got through talking with **Pete O'Dell, WB2D**. He called from W5RRR located at Houston's Johnson Space Center. Pete, now with CQ Communications, used to be the ARRL's Information Officer back in the early 1980's. It was he that fed us information from JSC on the STS-9 flight of **Owen Garriott/W5LFL** and the "first ham in space" mission in 1983 aboard Columbia. Now he was doing it again.

"The day has gone very well," Pete told us. "There were exceptional contacts with the schools in Texas, Oklahoma, Illinois, California, Indiana and Pennsylvania. In all these cases students had a chance to ask questions of the astronauts and get their answers back direct. In one session in Texas there were four different schools on-line and every school asked questions, a total of nine questions on that one pass.

"The technology worked fine. The only real variable is the antenna in the spacecraft is very directional. The quality of the signal on ground and in space is dependent on the attitude of the spacecraft which is constantly maneuvering. It is almost like having a yagi in space. Sometimes it is pointed at the earth ...and sometimes it is not.

"The schools were located in the Clear Creek Independent School District of Houston, several schools in southwest Oklahoma near Lawton, also the Potter Jr. High in Fallbrook, CA; Monroe Central School, Parker City IN; Lyman High School, Longwood FL; Hanover Elementary - Bethlehem PA; Beaver Creek Elementary School, Dowington PA, ...Reiszenstein Middle School, Pittsburgh, PA. The communications went through some amateur stations in the U.S. - also stations in Ecuador and Brazil.

"Some of the questions the kids asked were interesting! Among them;

- Will the orbit you take be anywhere near where the space station will be?
- Are your emotions any different while in space?
- Do you tend to re-evaluate your life when you look down at the earth?

W5YI REPORT

National Volunteer Examiner Coordinator

Page #4

April 15, 1991

- What kind of preparations are you making for the space walk?
- We understand this is Commander Steve Nagel's third flight. He has flown all three positions; Mission Specialist, Pilot, ...Commander. How is training for this flight different from the other flights?
- Why is the Gamma Ray Observatory being placed in space and how is this going to help our planet?
- What inspired you to become an astronaut?
- If you could set just one goal for this mission, what would that one goal be?
- One kid asked: "How high do you have to be to escape gravity?"

Ken Cameron (KB5AWP) explained that they really had not escaped gravity, they had simply escaped the earth's atmosphere and were travelling at a speed where gravity was balanced by the centrifugal force.

"Communications with the schools started about 9:30 this morning and we have one 'make-up' pass to go to pick up schools we missed earlier."

"The astronauts sent down two slow-scan pictures. One was put on the (telephone) bridge, the other a direct picture into SAREX Control. The picture on the bridge was of Mission Specialist (Linda) Godwin. The students were able to see that picture since slow-scan can be transmitted over a standard audio circuit.

"We had tremendous media coverage of the contact with the Clear Creek School District. That was done from the station set up here at the (space) museum on the grounds of Johnson Space Center in the visitor's center. Every network was here except NBC. They covered it from a different location. It should be on CNN right now.

"The packet equipment is up and working. We have confirmed packet contacts and confirmed heard packet transmissions. The confirmations are standard packet handshaking and QSO numbers.

"SSTV is going to get a major workout tomorrow during the deployment of GRO. There will be time

where there will be no transmitted video from the shuttle through standard master channels and whatever we can get through the slow-scan TV will be the only visual link with the earth for a period of time. The quality of the slow-scan is excellent when it is 'there' - again, it depends on the antenna position. Monday is more SSTV during the EVA, spacewalk. When SSTV is turned off, the packet robot will be available. There will be another FSTV try tomorrow morning at 9:34. I will check back with you then.

"My own personal observation is the ARRL and AMSAT field organizations have done a phenomenal organizing job. The JSC hams and others directly connected with NASA are absolutely invaluable. They all deserve a tremendous amount of praise. I think the evidence of the good work that has been done from the days STS-9 and Owen Garriott and the professional way that things have been handled can be seen in the way that NASA now views the SAREX. It is now an official part of the space program and it's very much supported by NASA. They see the value of it, particularly in getting the message of the needs of the space program out to school children.

Sunday Afternoon, 1:00 p.m.

Pet O'Dell/WB2D and Bill Tynan/W3XO called again to update us on SAREX progress from W5RRR. Pete said the Fast Scan TV experiments were very successful this morning. FSTV was uplinked from WA4NZD, Marshall Space Center, Huntsville, AL; W5RRR, Johnson Space Center, Houston and KC6A/Long Beach, CA.

Pete said the slow-scan TV pictures of the Gamma Ray Observatory deployment was temporarily "on hold" due to a problem with a high-gain antenna aboard the \$650 million GRO.

The final 'make up' school pass went very well. "Schools in Florida and Pennsylvania that had contacts scheduled got through." W5RRR also got feedback from Australia that several schools contacted Atlantis direct on 2 meters. Ken Cameron/KB5AWP answered many questions from students in Melbourne, Adelaide and Western Australia.

THE HAM RADIO HANDBOOK - NOW!! Obtain your Amateur Radio License - With just a few simple steps, you can be a licensed ham radio operator. The HANDBOOK is the most comprehensive and easiest to understand handbook available. It contains all the information you need to pass the Element 2 and 3(A) test questions, multiple choices, correct answer appearing in all written examinations by license class and sub-element.

W5YI REPORT

National Volunteer Examiner Coordinator

Page #5

April 15, 1991

- **Ham Radio Outlet**, the nation's largest supplier of amateur radio gear, expands to eleven stores next month when they open in Portland, Oregon. Their Anaheim, CA, store also has moved to new quarters at 933 N. Euclid St. (Tel. 1-800-854-6046)
- The Dayton Hamvention's prestigious *Ham-of-the-Year* goes to none other than **John B. Johnston, W3BE**, Chief of the FCC's Personal Radio Branch. Johnny was nominated by a coalition of radio amateurs for his nearly twenty years of dedicated service to the Amateur Service. Among his accomplishments was supervising Rulemaking that led to new streamlined Part 97 FCC Rules and Regulations for the Amateur Service and a Codefree entry level license class.

Specific Achievement Award winner is **Nate Brightman/K6OSC** for his work in getting the ham station re-installed aboard the Queen Mary ocean liner berthed in Long Beach, California.

Lou McFadin/W5DID gets the **Technical Achievement Award** for his engineering guidance to the SAREX, the Shuttle Amateur Radio Experiments.

All will receive their awards on April 27th at the Dayton Hamvention banquet. Hopefully all five SAREX STS-37 astronauts and **Roy Neal/K6DUE** will also be in attendance. Astronaut **Tony England/W0ORE** is scheduled to be the banquet keynote speaker.

- The Petition (assigned RM-7649) filed by **Tom Blackwell/N5GAR** and **Joe Jarrett/K5FOG** requesting an amendment to §97.205(g) seems to be gaining momentum. RM-7649 calls for the FCC to hold the originator of a prohibited transmission primarily responsible ...with the licensee of the repeater/digitpeater having secondary responsibility. The new paragraph 'G' "...does not eliminate a trustee's responsibility for insuring the proper operation of his repeater. It is intended to protect him from blame for those instantaneous operations over which he has no effective control."

Dr. Wayne Green/W2NSD/1, publisher of 73 Magazine commented "The rule change proposed in RM-7649 provides a simple solution to the problem which the FCC has caused."

K0BJ/Bruce Frahm believes (1.) "...the burden of responsibility for communication lies with the party which introduces the communication" and (2.) "...in cases of non-human relay such as repeaters and packet radio, the relay process is technically feasible without human intervention, and is carried out nearly instantaneously. Clearly, in order for technology to be advanced as fully as possible, we must hold the relay point faultless for the content of communications not originating with their operation. What better time to determine the propriety of communications than at its introduction into the communications chain?"

FEBRUARY AMATEUR LICENSING STATISTICS

<u>February</u>	<u>1988</u>	<u>1989</u>	<u>1990</u>	<u>1991</u>
New				
Amateurs:	1624	1274	1941	2162
<u>Upgrading:</u>				
Novices	1106	1002	1134	2060
Technicians	303	332	440	670
Generals	239	274	320	400
Advanced	172	197	230	275
<u>Total:</u>	<u>1236</u>	<u>2077</u>	<u>2133</u>	<u>3405</u>
<u>Renewals: (*)</u>				
Total Renew:	4193	521	* 155	* 69
Novices	376	64	* 34	* 7
<u>Purged:</u>				
Total Dropped:	693	890	* 798	* 11
Novices	378	402	* 360	* 3
<u>Census:</u>				
<i>Indiv. Oper.</i>	<i>433313</i>	<i>446452</i>	<i>463127</i>	<i>504360</i>
Change/Year	+11231	+13139	+16675*	+41233*
<u>Individual Operators by Class:</u> (and % of total)				
<u>Extra</u>	<u>Advan.</u>	<u>General</u>	<u>Technic.</u>	<u>Novice</u>
<u>February 1988</u>				<u>Total:</u>
44205	98408	113949	94361	82390
10.1%	22.7%	26.3%	21.8%	100.0%
<u>February 1989</u>				
47500	99491	114256	104113	81092
10.6%	22.3%	25.6%	23.3%	100.0%
<u>February 1990 (*)</u>				
49648	100738	115678	113699	83364
10.7%	21.8%	25.0%	24.5%	100.0%
<u>February 1991 (*)</u>				
54246	105628	120241	129386	94859
10.8%	20.9%	23.8%	25.7%	100.0%
Club/				
RACES &	<u>(1988)</u>	<u>(1989)</u>	<u>(1990)</u>	<u>(1991)</u>
Military:	<u>2385</u>	<u>2264</u>	<u>2450</u>	<u>2429</u>
Total Active:	435698	448716	465577	506789
% Increase	+2.6%	+3.0%	+3.8%*	*+8.9%*
(*) NOTE:	The number of amateurs in 1990 and 1991 is <u>not comparable</u> with prior years. Due to the implementation of the 10-year term license in 1984, amateurs who would ordinarily be dropping out of the Amateur Service between 1989 and 1993 by not renewing will be carried on the amateur roles for another five years before being purged from the FCC's data base. This has the effect of <u>overstating</u> the amateur census for 1989 and 1990 since the records of silent keys and non-renewals will not be deleted. The number of active amateur radio operator records now is in excess of half a million! Fastest growing license class continues to be the Technician level.			

[Source: FCC Licensing Facility, Gettysburg, PA]

TALKING BACK TO YOUR TELEVISION SET

After years of lobbying by **TV Answer Inc.** the FCC has proposed to create a new 220 MHz *Interactive Video and Data Service* (IVDS, General Docket 91-2) that the company says will bring "...millions of viewers back to television". The system uses networked base stations to gather data from set-top units for impulse shopping, home banking, pay-per-view movies, games and viewer polling.

The IVDS would be a new personal radio service under Part 95 - the same rule part that governs CB, Radio Control and the General Mobile Radio Service. The FCC would license two competing IVDS carriers on a local, not nationwide, basis. One would use 218.0-218.250 MHz and the other 218.251-218.500 MHz. Each would have exclusive rights to the channel within a 40 mile radius.

Base stations would transmit with 1-20 W ERP depending on proximity to TV channel 13 transmitters. Home units run 20 W maximum ERP. IVDS licensees would have to install free filters in sets of viewers who complain of channel 13 interference. If they fail to eliminate the interference they would have to close the offending base station.

TV Answer claims each of their cell sites will have an operating radius encompassing about 10,000 homes. They say they "...can process up to 600,000 responses per minute per cell site, with no overloads ...even at peak times." Each cell site is tied in to their Reston, VA, headquarters by satellite. Service providers and programmers send their services to Reston via landline.

The FCC proposes to issue licenses on a first-come, first-served basis with mutually-exclusive applications resolved by lottery. It wants comment on whether it should, and legally could, auction the frequencies to the highest bidder. The agency says that using hearings to decide licensees would be complex and expensive and would delay service to the public.

IVDS applicants would have to provide the FCC with detailed technical plans. These include the number and location of base stations and how the

system will serve at least 50% of the area within the protected radius; modulation, coding, reuse, access scheme, throughput and spectrum efficiency. Applicants would not have to show financial ability to construct the system. The Commission has proposed no annual fee for IVDS licensees, though we expect that if IVDS is approved the FCC will find a way to charge licensees a fee if they get authority from Congress to do so.

TV Answer's prototype **Answer Box** is a low-profile black unit with a rubber ducky antenna. The Answer Box can hold up to 512 MB (not KB) of memory through combinations of RAM and ROM cards inserted into 16 slots. The Box displays a graphic menu on the TV and the user shoots at choices with a gun-like remote control.

TV Answer units rent for \$12.95/month. With its experimental FCC license, the company will enter the McLean, VA market in late spring. In D.C. area shopping malls, its kiosks use video cameras to record the behavior of consumers trying out the device.

TV Answer has already embarked on a massive (and incredibly expensive) 8-page full-color print media campaign to insure that every broadcaster and cable operator is aware of the FCC's proposal last month to allocate .5 MHz to *Interactive Video Data Services*. They say that the cost is potentially free for most viewers due to rebates available to consumers who purchase products and services through their service.

Some of TV Answer's features include pre-scheduling VCR programming, instant viewer political and public affairs polling, instant test marketing of products and services, in-home educational courses, video couponing, interactive commercials, on-screen "microsecond" shopping, ordering and payment, pay-per-view video ordering/paying, banking/bill paying "...even network game shows can directly and simultaneously involve viewers..."

TV Answer is also widely publicizing the fact that they need help. They say they "...are ready to work with pioneering software developers ...to create unique services for millions of consumers." Most applications will reside in multiple "memory

W5YI REPORT

National Volunteer Examiner Coordinator

Page #7

April 15, 1991

cards" which require programming. They want to collaborate with manufacturers (to whom they will license their technology); broadcasters and cable operators (to adapt and create new interactive video programming) and advertisers and merchandisers (by making transactions so easy and instantaneous.)

Not everyone agrees that interactive systems will return millions of viewers to television. In a *Washington Times* story, MIT Media Lab scientist Russell Neumann observed: "If you think *Wheel of Fortune* is stupid, then being able to tell Pat Sajak whether to spin the wheel hard or soft is probably not going to make a lot of difference." Comments on General Docket 91-2 are due June 10 and replies July 10, 1991.

PACKET VIOLATIONS: NO FCC ACTION YET

Attorney criticizes citation

The FCC has not yet concluded its packet violations case from late January. As covered in our Feb. 15 issue, the FCC cited 11 hams for allegedly retransmitting a message that appeared to originate from Joseph Reed, WA3QNS. The message asked the reader to call 1-900-NO-WAR to contact the Coalition to Stop U.S. Intervention in the Middle East. Most 900 numbers generate revenue for their owners, and the FCC believes transmitting the message was a violation of Amateur Radio's no-commercial-content rule.

A firestorm of opposition from the amateur community followed the citations. The *New York Times* ran an article, and even *Cable News Network* picked up the story. The FCC was roundly criticized for citing a political message. But most of the protests claimed that the intermediate stations that had automatically retransmitted the message should not be held responsible for the content of the message.

Packet bulletin-board systems around the country shut down or drastically changed their practices to allow screening of all content before retransmission. The changes resulted in a reduction of messages with questionable content, but also in a slowdown of packet message handling in general.

The FCC has received replies from some of the amateurs cited, but has not decided what to do. No fines have yet been issued. We know that at least one of the amateurs cited has retained an experienced communications attorney, John McVeigh. "We will request that the citation be withdrawn," the attorney told us.

Not a shred of evidence

"The citation is so qualified as to be void on its face," McVeigh said. "It says 'you may have operated your station in violation...' and 'it appears that you used the amateur service to facilitate the business activity'...A citation for a regulatory violation has to make specific and detailed allegation of fact."

"There is no allegation that the FCC monitored the individual involved transmitting the message in question. Anyone with the slightest facility in computer use can produce a message like this and transmit it over the air. The equipment is available. The mere fact that in Norfolk, someone picked up a message bearing this callsign, anyone could have done that. The FCC has not a shred of competent evidence that any of the amateurs cited were involved in the transmission."

"The mere fact that it has a 900 area code does not establish that the Coalition gets any money out of it. It is political speech, not commercial speech. The FCC is prohibited by the First Amendment from prohibiting dissemination of political opinions by amateur radio."

Commercial and political intertwined

"I'm sure there are questionable messages on packet radio. If the FCC wants to crack down on them I don't have any problem with that. But this is the worst example they could have picked. Even if the Coalition gets money out of the call -- which an intermediate sysop couldn't tell -- this is protected speech. [In other cases] the Supreme Court has ruled that even though there may be a commercial element, the commercial and political aspects of a message can be so intertwined that the whole message is accorded the protection of political speech."

W5YI REPORT

National Volunteer Examiner Coordinator

Page #8

April 15, 1991

McVeigh described an interesting case of the CB days in 1974, in which husband and wife CB operators were cited for working skip and for failure to respond to FCC correspondence. An FCC employee using monitoring equipment heard an 11 meter QSO that allegedly occurred between stations in Colorado and Georgia. The station in Colorado asked for a QSL card and gave a P.O. box over the air. The FCC found out who rented the P.O. box. It was rented by the couple, who were active in a CB club. One of the "commandments" of this club was, "Do not respond to FCC communications."

"The only cognizable link between the transmissions and the couple cited was the P.O. box. There was no direction finding or voice identification. The transmissions could have been made by anyone who knew the P.O. box." A review board found that there was an absence of direct evidence. This case, McVeigh said, stands for the proposition that the citation violates the *Administrative Procedures Act* which says any order has to be supported by substantial evidence.

Latest petitions

The FCC has received new petitions to address the problem of responsibility for message content. We believe the Commission will consolidate all the petitions into a single *Notice of Inquiry* or *Notice of Proposed Rulemaking*. The latest ones are from *Douglas E. Smith, W9WI* of Nashville (RM-7675) and *John S. Birmingham, WB8PUF* of Mahopac NY (RM-7676).

W9WI writes, "Ever since the use of automatic relay stations became popular in the Amateur Service in the mid 1970s, amateurs operating these relay stations have assumed that the Commission would not hold them responsible for the occasional relay of transmissions in violation of Sections §97.111, §97.113, §97.115 and other rules involving the non-technical content of amateur transmissions.

"Procedures were adopted to prevent the frequent and routine abuse of the regulations, and to trace violations where possible, but the complete prevention of violations was considered impractical."

The anti-war packet violation incident "...has severe implications for the Amateur Service," W9WI commented. By holding the operator of a relay station responsible for content of all relayed transmissions, he said, the FCC forces the operator to record all transmissions and not retransmit them until he or she has had the chance to review them for legality.

This would greatly complicate packet operations and "...could be the end of voice repeaters." The operator of a voice repeater would have to record the signals, play them to review them, and then play the recording back over the repeater transmitter. "The amount of time required to complete a voice conversation over a repeater would triple, and the frequency would sit unoccupied and wasted while the transmissions were being reviewed."

Smith recommends, simply, that §97.109, "Station Control", be amended to ensure that when a violation in non-technical content occurs, only the station originating the transmission should be liable for Commission sanctions.

In his petition, WB8PUF recommended changing Part 97 so that the control operator of an auxiliary, repeater, space station or station retransmitting RTTY or data not "knowingly" allow the station to transmit communications in violation of §97.111 ("Authorized Transmissions") or §97.113 ("Prohibited Transmissions").

"We are a nation with a basic principle of Freedom of Speech," Birmingham said. "While this does not give an individual the Constitutional right to yell FIRE in a crowded movie theater when there is no fire, that individual is held legally responsible for his or her actions, not the ticket taker that admitted the person. The Commission's Rules as currently written place responsibility on an individual that can unknowingly violate the Rules because of the technological developments that make *prior restraint* impossible and/or impractical for a hobby radio service."

FCC RELEASES INSPECTION RESULTS

Just before we went to press, the FCC released

plus \$2.00 shipping charge
"in test

multiple choices and answers in every

ORDER FROM:

The Radio Amateur's LICENSING HANDBOOK is for everyone
who wants to know about amateur radio license tests, amateurs

information about the controversial Amateur Survey it made on February 26 and 27. Through interviews with affected hams and FCC officials, our April 1 issue revealed that hams nationwide were targeted for intensive data gathering by all 35 FCC Field Offices. The offices inspected 209 amateur stations, of which 31 were the subjects of interference complaints.

The purpose of the study was, in the FCC's words, "to determine compliance with the Section 97.313(a), 47 CFR 97.313(a), requiring the use of minimum transmitter power." (47 CFR refers to Title 47 of the Code of Federal Regulations, which contains Part 97.)

"The study also examined the link between operating power and interference to home electronic entertainment equipment (HEEE), such as television or radio receivers," the FCC said. The FCC made observations of the communications conducted at the power usually used by the station, and then made similar observations with the power reduced by one-half or more.

The findings of the study are:

- 75 percent of the stations experienced no degradation in communications capability when the power was reduced by one-half or more. Often this meant going from 100 W down to 40 W, according to Jeffrey Young of the Enforcement Division.

- Lower power resulted in reduced interference to home entertainment equipment in 1/3 of the 31 RFI cases. "We were surprised that reducing the power that much had so little effect," Young said. "Reducing power takes you only so far."

- 70 percent of the amateur operators interviewed stated that their stations normally transmit with less than 200 W of transmitter power. Approximately 2/3 of the stations reported to be the source of interference were transmitting with 100 W or less.

"We were surprised by the low power being used," Young said. "We expected to see more amplifiers in use at the stations. This is of course a small

sample, not a super-scientific study. It's an indicator. All field offices participated, so we did get at least a national picture."

The conclusions of the study are:

- Most amateur stations are not operating at minimum power as required by Section 97.313(a). This is true even though the stations studied are operating at less power than was expected, Young said.
- Reduced power can alleviate significant reception interference problems without degradation in communications capabilities.

The way the FCC measured degradation in communications caused by lower power was to record the number of times the operator on the other end of the QSO complained of "no copy" or asked for repeats. Inspectors counted these complaints on a per-minute basis.

- In addition to reducing transmitter power, other remedies such as transmitter or receiver filtering may be required to eliminate interference.

Finally, we asked Young why the FCC doesn't seem to use its Congressionally-granted authority to enforce RF interference susceptibility rules for consumer products. He answered our question, although he clearly stated that this does not necessarily represent his own or the Commission's opinion:

"Doing the public interest often means doing what most people want. My feeling is that there's a trade-off. It may cost five dollars per TV set to reduce susceptibility to the point where it would make a big difference for hams. So it's a question of economics. Also, the Amateur Radio Service is not a safety service or a service on which someone's life depends. It's a hobby service."

"If the power limits for the Business Radio Service were as high as they are for amateur stations, and if their frequencies were similar, then you would see a very much different response from this agency. Those would be [business radio] stations you can't shut down."

W5YI REPORT

National Volunteer Examiner Coordinator

Page #10

April 15, 1991

"If somebody made the point that it might cost one or two dollars per set to reduce susceptibility, that might push them [the FCC] over."

PETITION FILED ON HF PACKET

This is the text of RM-7681, filed by *Robert C. Rogers N8FAU, Donald LaBrenz II WB8I* and *George Schemm N8JAT*.

The FCC through the ARRL has issued *Special Temporary Authorities* to allow an experimental HF packet system. This experiment has proven that HF packet is a viable networking possibility.

Most STAs have been issued to frequencies that allow international networking. There is a critical need for interstate, intrastate and regional networks. These networks will fill the gaps in the 50 MHz and above networks. These existing networks have proven their effectiveness during disasters. And with regional networks the network will be faster, more reliable, and will allow for a back up of the VHF networks.

Part §97.69(d) should be amended as follows:

An amateur station may be under automatic control when transmitting digital communications on 50 MHz. Stations operating ARRL AX.25 Amateur Packet Radio Link Layer Protocol, Version 2.0 October 1984 (or compatible) are authorized to operate in the following sub-bands:

80 m 3.590-3.615 MHz
40 m 7.075-7.100
30 m 10.140-10.150
20 m 14.090-14.115
15 m 21.075-21.100
10 m 28.090-28.115

Part §7.80(b) should be amended as follows:

No amateur station may be operated under automatic control while transmitting third-party traffic, except an amateur station retransmitting digital packet radio communications on frequencies 50 MHz and/ above. Below 50 MHz, the following sub-bands (sic):
[exactly the same as above list of bands except

40 m changed to 7.015-7.100 MHz].

Such stations must be using the ARRL AX.25 Amateur Packet Radio Link Layer Protocol, Version 2.0 October 1984 (or compatible). HF operations in the above sub-bands must incorporate a timeout timer that inhibits the transmitter after 90 seconds of transmission and keep the system down until inspection and/or repair of the system can be completed.

FCC FIELD OPERATIONS BUREAU ON "POWER"

We spoke briefly on Friday, April 5th, with *Dick Smith*, FCC's Field Operations Bureau Chief concerning the results of the amateur power survey. We asked him *"How does an amateur know how much power to use when making a contact?"*

He said "...a combination of things would help the amateur to reach a decision on operating power levels. One is his experience with prior contacts under similar conditions. Adjustments can be made based on current conditions to compensate for things like changes in propagation. Experimentation; attempt to establish communication at a lower power ...and increase it if necessary.

"We need to call attention to the power rule and the fact that this (minimum power) rule does exist. Some attempt should be made to comply with it. Amateurs need to determine if they are operating at a power level that is more than needed. The whole purpose of this episode is to provide an awareness to the amateur community that this is something they should pay attention to. Think of it as an educational effort. We are also providing the Private Radio Bureau with a copy of the results for any action they deem appropriate.

"We did not issue any sanctions, NALs or fines having to do with these power surveys. The NAL (\$225 fine) issued to *Tom Owens, K7RL* (Seattle, WA) was for violations observed during pre-inspection monitoring ...before any contact was made with Owens by the FCC. He was not cited for anything that occurred during the inspection. You also mentioned *Wayne Hudson, KT7G* in your (last report). His station was selected because of past TVI problems."